

TECHNICAL NOTES

Sources of Data

Births, Deaths and Fetal Deaths

Birth, death and fetal death certificates are the source documents for data on these events. Birth certificates are usually completed by hospital personnel, while death and fetal death certificates are prepared by hospital personnel, physicians, medical examiners and funeral directors. Certificates of births, deaths and fetal deaths which occur in New Jersey are transmitted through local registrars to the State Registrar for processing and filing. Through agreements sponsored by the national Vital Statistics Cooperative Program, information from birth, death and fetal death certificates for New Jersey residents are sent to the State Registrar when these events occur in other states. Information from certificates on out-of-state vital events are provided under the program for statistical purposes only.

The birth, death and fetal death data presented in this report were generated from data files available at the time of preparation of the respective chapters. Any data pertaining to a vital event for which a certificate was filed after that time or relating to corrections or revisions made since the data were processed for this report are not included. Birth and death computer files are periodically updated by Bureau of Vital Statistics and Center for Health Statistics staff based on correction reports received from local registrars and from quarterly data quality control analyses conducted by the Center for Health Statistics. This report incorporates data from the most recently updated files. Thus, data for the current year presented in future reports of vital events may differ slightly from numbers presented in this report.

Marriages and Divorces

Information on marriages in this report was obtained from marriage certificates issued in New Jersey. Marriage certificates are filed with the State Registrar. Divorce and annulment statistics were provided by the New Jersey Superior Court, Chancery Division. Marriages are recorded by the place of issuance of the certificate and divorces and annulments are recorded by place of judgment. Marriages, divorces and annulments of New Jersey residents which occur outside of the State are not included in this report, while marriages and divorces of out-of-state residents occurring in New Jersey are included.

Morbidity

Reporting of cases of selected communicable diseases to the State Department of Health and Senior Services is required under the New Jersey Sanitary Code, Chapter II and the N.J.A.C. 8:57. Cases of AIDS are reportable to the HIV/AIDS Surveillance Program in the AIDS Epidemiological Services Unit of the Division of AIDS Prevention and Control, while reports of other communicable diseases are filed with appropriate units within the Division of Communicable Diseases. Summary reports of cases of communicable diseases by county of residence and selected demographic characteristics are provided by these units.

Population

Population figures for 1995 which are presented in this report and used to calculate various rates are estimates developed by the U. S. Bureau of the Census for the National Cancer Institute. Estimates were developed for the state and the twenty-one counties by age, race, Hispanic ethnicity and sex categories. These estimates may be revised by the Census Bureau, as a series of estimates for the decade are developed.

The current set of estimates presented in this report have not been rounded. However, it should not be presumed that they have the degree of accuracy which such precise figures might imply. Official 1995 population estimates for New Jersey and its counties are available through the Center for Health Statistics and through the Division of Labor Market and Demographic Research of the New Jersey Department of Labor.

Allocation of Data by Residence or Occurrence

For public health planning and policy determination, the most useful population to study is usually the resident population of an area. In the case of births, deaths and fetal deaths, the existence of resident certificate exchange agreements among the registration areas in the country permits analysis of resident birth and death statistics. Unless otherwise noted, the data presented for births, deaths and fetal deaths represent vital events of the resident population. Morbidity data relate to New Jersey residents; reports of cases of communicable diseases diagnosed in New Jersey residents in other states are transmitted to the New Jersey Department of Health and Senior Services. Marriage and divorce statistics in this report represent vital events which occurred in New Jersey, regardless of the state of residence of the individuals involved.

Allocation of vital events by place of residence within the State is sometimes difficult because classification depends on the statement of the usual place of residence provided by the informant at the time the certificate is completed. For a variety of reasons, the information given may be incorrectly recorded. A common source of error is the confusion of mailing address with residence address. The degree to which incorrect information on residence has been recorded on the certificates is not precisely known, but this issue is generally a problem only for certain minor civil divisions. For this reason, municipality data are not presented in this report.

Quality of Data

The reporting of births and deaths is considered to be essentially complete. According to the National Center for Health Statistics (NCHS), more than 99 percent of births and deaths are registered. Reporting of fetal deaths is believed to be somewhat less complete. For later periods of gestation, however, fetal death reporting is thought to be more complete (NCHS, 1994). The completeness of reporting by residence is dependent on the effective functioning of the interstate data exchange program for certificates fostered and encouraged by NCHS. Research has shown that there is some degree of slippage in receiving information on all births and deaths of New Jersey residents occurring in other states. However, the number of missing events is thought to be small, relative to the overall number of events.

The quality of the birth, death and fetal death data included in this report is a function of the accuracy and completeness of the information recorded on the respective certificates and of the quality control procedures employed in the coding and keying processes. A query program in which the individual(s) responsible for completing the certificate is questioned about missing or conflicting information is carried out by staff of the Bureau of Vital Statistics of the New Jersey Department of Health and Senior Services. This process is augmented by the data quality control analyses performed by the Center for Health Statistics using all of the NCHS edit criteria.

In order to participate in the national Vital Statistics Cooperative Program, states had to achieve an error rate of two percent or less on each certificate item for three consecutive months. The error rates relate to both coding and data entry errors. New Jersey has met the error tolerance requirements for the cooperative program. After satisfying initial requirements, a monthly sample of records is used to determine that the error rate on each birth certificate item is approximately four percent or less and is no more than two percent of each death certificate item other than the medical cause-of-death information. Due to the complexity of the coding system, cause-of-death coding has a five percent error tolerance level set by NCHS. Multiple cause-of-death coding of New Jersey death records is performed by NCHS staff.

Racial And Ethnic Classification

Racial designations used in this report are white, black and other races, which includes all racial groups other than white or black. The reporting of ethnicity is limited to Hispanic and non-Hispanic categories. These classifications are based on self-reports, or in the case of death records, on reports from respondents, usually a family member, or from persons responsible for preparing the death certificates. The race and ethnicity of an infant are not reported on the birth certificate and are classified for statistical purposes as the race and ethnicity of the mother.

A racial group (white, black or a detailed list of eight other races and an unknown race category) and an ethnicity (Hispanic or non-Hispanic) are reported for each individual for whom a vital record is filed. Thus persons who are identified as Hispanic have also been included in any analysis of data by race, in one of the racial groups or in the race not stated category, if a racial group is not reported.

Definitions

Natality

Apgar Score -- a summary measure of an infant's clinical condition based on heart rate, respiratory effort, muscle tone, reflex irritability and color taken at one and five minutes after delivery. Each of the factors is given a score of 0, 1, or 2; the sum of these five values is the Apgar score which can range from 0 to 10. A score of 10 is optimal and a low score (usually considered to be less than 7) is considered an indication of potential health problems and raises concerns about the subsequent health and survival of the infant.

Birth Weight -- the first weight of the fetus or newborn obtained after delivery. Birth weight is recorded in grams.

Live Birth -- the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after such separation, breathes or shows any evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

Low Birth Weight -- birth weight of less than 2,500 grams or approximately 5 pounds, 8 ounces. Prior to 1989, New Jersey defined low birth weight as 2,500 grams or less.

Marital Status -- the marital status of the mother for statistical purposes is determined for data years after 1988 by the response to the birth certificate item, "Mother married? (At birth, conception, or any time between)".

Medical Risk Factors for This Pregnancy (Ventura, et al., 1997):

Anemia - Hemoglobin level of less than 10.0 g/dL during pregnancy or a hematocrit of less than 30 percent during pregnancy.

Cardiac Disease - Disease of the heart.

Acute or chronic lung disease - Disease of the lungs during pregnancy.

Diabetes - Metabolic disorder characterized by excessive discharge of urine and persistent thirst; includes juvenile onset, adult onset, and gestational diabetes during pregnancy.

Genital herpes - Infection of the skin of the genital area by herpes simplex virus.

Hydramnios/Oligohydramnios - Any noticeable excess (hydramnios) or lack (oligohydramnios) of amniotic fluid.

Hemoglobinopathy - A blood disorder caused by alteration in the genetically determined molecular structure of hemoglobin (example: sickle cell anemia).

Hypertension, chronic - Blood pressure persistently greater than 140/90, diagnosed prior to onset of pregnancy or before the 20th week of gestation.

Hypertension, pregnancy-associated - An increase in blood pressure of at least 30mm Hg systolic or 15 mm Hg diastolic on two measurements taken 6 hours apart after the 20th week of gestation.

Eclampsia - The occurrence of convulsions and/or coma unrelated to other cerebral conditions in women with signs and symptoms of pre-eclampsia.

Incompetent cervix - Characterized by painless dilation of the cervix in the second trimester or early in the third trimester of pregnancy, with premature expulsion of membranes through the cervix and ballooning of the membranes into the vagina, followed by rupture of the membranes and subsequent expulsion of the fetus.

Previous infant 4,000+ grams - The birth weight of a previous live-born child was over 4,000 grams (8 pounds, 14 ounces).

Previous preterm or small-for-gestational age infant - Previous birth of an infant prior to term (before 37 completed weeks of gestation) or of an infant weighing less than the tenth percentile for gestational age using a standard weight-for-age chart.

Renal disease - Kidney disease.

Rh sensitization - The process or state of becoming sensitized to the Rh factor as when an Rh-negative woman is pregnant with an Rh-positive fetus.

Uterine bleeding - Any clinically significant bleeding during the pregnancy taking into consideration the stage of pregnancy; any second or third trimester bleeding of the uterus prior to the onset of labor.

Previous Pregnancy Terminations -- from the mother's pregnancy history on the certificate of live birth, a previous spontaneous or induced termination of pregnancy at any time after conception that did not result in

a live birth.

Trimester of Pregnancy -- the first trimester includes the first 12 weeks of pregnancy, the second trimester encompasses the thirteenth through twenty-fourth weeks and the third trimester is the period after the twenty-fourth week through delivery.

Very Low Birth Weight -- birth weight of less than 1,500 grams or approximately 3 pounds, 5 ounces.

Mortality

Cause of Death Classification -- a system of specification of the diseases and/or injuries which led to death and the sequential order of their occurrence. The version of the system currently in use is the International Classification of Diseases, Ninth Revision (1977), sponsored by the World Health Organization.

Fetal Death -- death prior to the complete expulsion or extraction from its mother of a product of conception; the fetus shows no signs of life such as breathing or beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. In New Jersey, the law requires reporting of fetal deaths of 20 or more weeks of gestation.

Infant Death -- death within the first year of life.

Maternal Death -- a death in which the certifying physician has designated a maternal condition as the underlying cause of death. In the Ninth Revision of the International Classification of Diseases, (1977), the World Health Organization defined a maternal death as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes".

Neonatal Death -- death of an infant within the first 27 days of life.

Perinatal Mortality -- for purposes of this report, includes fetal deaths of 20 or more weeks of gestation and neonatal deaths.

Postneonatal Mortality -- death of an infant from 28 days to one year of life.

Underlying Cause of Death -- the disease or injury which initiated the train of events leading directly to death or the circumstances of the unintentional injury or violence which produced the fatal injury. All cause-of-death data in this report relate to the underlying cause of death coded from the death certificate.

Years of Potential Life Lost (YPLL) -- a measure of the number of years of life not lived by each individual who died before reaching a predetermined age. For purposes of this report, the predetermined age is 65. This measure weights deaths at younger ages more heavily than deaths at older ages; the younger the age at death, the greater the number of years of potential life lost. The YPLL for a population is computed as the sum of all the individual YPLL for individuals who died during a specific time period.

Communicable Diseases

Stages of Syphilis (Larsen and Kraus, 1990):

Primary Syphilis -- begins within approximately 30 hours after infection; a primary chancre usually forms within two through six weeks of infection. Both treponemal and nontreponemal antibodies appear one through four weeks after the lesion has formed. Even without treatment, the lesion usually resolves within two months.

Secondary Syphilis -- occurs within six weeks of healing of the primary lesion. Disseminated lesions appear that are attributable to systemic infection. Virtually every organ and tissue of the body are affected. Whether treated or untreated, the lesions of secondary syphilis usually resolve within 2 through 10 weeks.

Latent Syphilis -- this stage represents a conversion from an acute to a chronic infection. After the first year, the host's immune response suppresses the infection to the point where lesions are not clinically apparent. A patient with reactive nontreponemal or treponemal tests in the absence of clinical symptoms is said to have latent syphilis. A patient is categorized as having early latent syphilis if the serologic tests of that patient have been nonreactive within the preceding year or if symptoms suggestive of primary or secondary syphilis were present during that time. Other patients are considered to have late latent syphilis and should be evaluated for potential asymptomatic neurosyphilis.

Verified Case of Tuberculosis -- is also referred to as a new active case of tuberculosis. These cases are characterized by (1) any bacteriological confirmation of the presence of *Mycobacterium tuberculosis* or (2) in the absence of bacteriological confirmation, for a diagnosis of active pulmonary tuberculosis the patient must present a positive purified protein derivative (PPD), or must exhibit a positive chest x-ray, or in the case of children, must be epidemiologically linked to another active case of tuberculosis. In the case of extrapulmonary tuberculosis, the patient must show signs of clinical improvement while taking tuberculosis medication (K. Shilkret, personal communication, 1992).

All Tables in the Report

Not Stated -- an inclusive term used to represent data which are missing, unknown, not available, or not classifiable.

Rates and Ratios

The presentation of vital statistics in the form of rates and ratios facilitates comparisons between political subdivisions with populations of different sizes or between subgroups of a population. Crude rates are calculated by dividing the number of events of a type that occur to the residents of an area, e.g., births, deaths, fetal deaths, by the resident population of an area or subgroup. The events are limited to those that occur within a specific time period, usually a year, and the population is, in general, the mid-year estimate of the resident population of the area, although census counts as of April 1 may be used in decennial census years. Crude rates are expressed in terms of occurrences within a standard, rounded population, usually 1,000 or 100,000.

While the denominators for rates consist of the population at risk of the events included in the numerator (e.g., births, deaths, fetal deaths), ratios are designed to indicate the relationship between two counts in which the denominator population is not at risk of the events included in the numerator. An example of a ratio contained in this report is the maternal mortality ratio in which the number of deaths due to maternal causes forms the numerator and the number of live births provides the denominator.

In order to compare natality and mortality experience among various ages and races or between the sexes, rates may be computed for subgroups of the population. These are referred to as age-, race-, or sex-specific rates and are calculated by dividing the relevant events within a subgroup by the population in the subgroup. Death rates from specific causes may also be calculated, with the numerator consisting of the deaths from the particular cause in an area and the denominator comprised of the population at risk of the disease or condition.

The numbers of births and deaths in an area are directly related to the demographic characteristics of the area's population. In comparing rates over time or among geographic areas, it is helpful to eliminate the effects of the differences in the populations' demographic characteristics on the comparison. This can be accomplished through adjustments of the rates for the particular characteristics of interest. Since age is the variable that has the greatest effect on the magnitude of rates (Shryock, Siegel and Associates, 1976), the most common type of adjustment of rates is for age. Direct adjustment of vital statistics rates involves application of existing rates (age-, race-, or sex-specific) to a standard population to arrive at the theoretical number of events that would occur in the standard population, at the rates prevailing in the actual population. These events are then divided by the total number of persons in the standard population to arrive at an adjusted rate. Adjusted rates are index numbers and cannot be compared to crude or other actual rates. The use of adjusted rates is limited to comparison with other adjusted rates, based on the same standard population. The standard population used in this report is the United States 1940 standard million, derived from the counts of the 1940

decennial census.

The definition of rates and ratios used in this report follows. It should be noted that alternative forms exist for some of these statistics. Some other states and the federal government may employ different formulae for the computation of selected rates, in particular, the perinatal and fetal death rates.

Age-Adjusted Death Rate -- Direct Method-the elimination of the effect of age on the crude death rates for purposes of comparison with other rates by applying actual age-specific rates to a standard population. The resulting death rate in the standard population is age-adjusted and can be compared to other death rates age-adjusted to the same standard population.

Age-Specific Birth Rate -- the number of resident live births to females in a specific age group per 1,000 females in the age group.

Cause-Specific Death Rate -- the number of resident deaths from a specific cause per 100,000 population.

Crude Birth Rate -- the number of resident live births per 1,000 population.

Crude Death Rate -- the number of resident deaths per 100,000 population.

Divorce Rate -- the number of divorces occurring in an area per 1,000 population

Fetal Death Rate -- the number of resident fetal deaths of 20 or more weeks gestation per 1,000 resident live births plus fetal deaths of 20 or more weeks of gestation.

General Fertility Rate -- the number of resident live births per 1,000 females aged 15 through 44 years.

Infant Death Rate -- the number of resident deaths under one year of age per 1,000 population.

Infant Mortality Rate -- the ratio of the number of deaths to children less than one year of age in a given year per 1,000 births in the same year.

Marriage Rate -- the number of marriage certificates issued in an area per 1,000 population.

Maternal Mortality Ratio -- the number of resident deaths from complications of pregnancy, childbirth and the puerperium per 100,000 resident live births.

Neonatal Death Rate -- the number of resident infant deaths within the first 27 days of life per 1,000 live births.

Perinatal Death Rate -- the number of resident neonatal deaths plus resident fetal deaths of 20 or more weeks gestation per 1,000 resident live births plus fetal deaths of 20 or more weeks gestation.

Postneonatal Death Rate -- the number of resident infant deaths from 28 days to one year of life per 1,000 live births.

Total Fertility Rate -- age-specific birth rates of women in five-year age groups multiplied by five and summed to form a total for all ages. This rate yields the number of children a cohort of 1,000 women would bear if they experienced the existing age-specific birth rates throughout their childbearing years.

Caution should be exercised in the interpretation of rates and ratios based on small numbers. Chance variations in the number of vital events occurring in sparsely populated areas can cause rates to fluctuate widely over time. For purposes of analyzing vital statistics rates for small areas, calculation of three or five-year average rates and other statistical methodologies for analyzing small numbers may provide more meaningful measures.

Cause-of-Death Rankings

The cause-of-death rankings found in this report are based on the list of 38 cause groups and a residual category employed in the cause-of-death distributions by race-sex groups and age and by county in the report. The one exception is that the cause groups Motor Vehicle Fatalities and Other Unintentional Injuries are combined into a single category, Unintentional Injuries, for purposes of ranking leading causes of death. As of the publication of New Jersey Health Statistics, 1992, a minor change was made in the grouping of certain infectious and parasitic diseases which removed a few ICD-9 codes that had previously been included in the "Residual" category and placed them in the "Other Infectious and Parasitic Disease" grouping. This was done to make the groupings more consistent with NCHS' presentation of mortality data.

The cause-of-death ranking of infant deaths are based on the NCHS List of 61 Selected Causes of Infant Death (Anderson, R.N., et al., 1997).